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1 CRAMES: compressed RAM for embedded systems

 Lei Yang, Robert P. Dick, Haris Lekatsas, Srimat Chakradhar

September 2005 CODES+ISSS '05: Proceedings of the 3rd IEEE/ACM/IFIP international conference on Hardware/software codesign and system synthesis

Publisher: ACM

Full text available: pdf (382.45 KB)
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Bibliometrics: Downloads (6 Weeks): 9, Downloads (12 Months): 131, Citation Count: 3

Memory is a scarce resource in many embedded systems. Increasing memory often increases packaging and cooling costs, size, and energy consumption. This paper presents CRAMES, an efficient software-based RAM compression technique for embedded systems. ...

Keywords: compression, embedded system, memory

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2 Surpassing the TLB performance of superpages with less operating system support

 Madhusudhan Talluri, Mark D. Hill

December 1994 ACM SIGOPS Operating Systems Review, Volume 28 Issue 5

Publisher: ACM

Full text available: pdf (1.50 MB)
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Many commercial microprocessor architectures have added translation lookaside buffer (TLB) support for superpages. Superpages differ from segments because their size must be a power of two multiple of the base page size ...

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3 Surpassing the TLB performance of superpages with less operating system support

 Madhusudhan Talluri, Mark D. Hill

November 1994 ACM SIGPLAN Notices, Volume 29 Issue 11

Publisher: ACM

Full text available: pdf (1.50 MB)
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4 Surpassing the TLB performance of superpages with less operating system support

 Madhusudhan Talluri, Mark D. Hill

November 1994 ASPLOS-VI: Proceedings of the sixth international conference on Architectural support

for programming languages and operating systems

Publisher: ACM

Full text available:  pdf(1.56 MB)

Additional Information: [full citation](#), [abstract](#), [references](#), [cited by](#), [index terms](#)

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Many commercial microprocessor architectures have added translation lookaside buffer (TLB) support for superpages. Superpages differ from segments because their size must be a power of two multiple of the base page size ...

5 [Performance-directed energy management using BOS](#)



Pratap Ramamurthy, Ramanathan Palaniappan

January 2007 ACM SIGOPS Operating Systems Review, Volume 41 Issue 1

Publisher: ACM

Full text available:  pdf(516.30 KB)

Additional Information: [full citation](#), [abstract](#), [references](#), [index terms](#)

Bibliometrics: Downloads (6 Weeks): 2, Downloads (12 Months): 42, Citation Count: 0

One of the major challenges in today's computing world is energy management in portable devices and servers. Power management is essential to increase battery life. High end server systems use large clusters of machines that consume enormous amount of ...


6 [The overhead model of word-level and page-level incremental checkpointing](#)



Junyoung Heo, Yookun Cho, Gwangil Jeon, Haklin Kimm

April 2006 SAC '06: Proceedings of the 2006 ACM symposium on Applied computing

Publisher: ACM

Full text available:  pdf(109.20 KB)

Additional Information: [full citation](#), [abstract](#), [references](#), [index terms](#)

Bibliometrics: Downloads (6 Weeks): 1, Downloads (12 Months): 21, Citation Count: 0

Generally, word-level granularity for incremental checkpointing may reduce the checkpoint file size, and hence get better the performance. However, word-level granularity may not always be more efficient than page-level granularity, because word-level ...

Keyw ords: checkpoint and recovery, fault tolerance, page-level incremental checkpointing, word-level


7 [A case for context-aware TCP/IP](#)



Carey Williamson, Qian Wu

March 2002 ACM SIGMETRICS Performance Evaluation Review, Volume 29 Issue 4

Publisher: ACM

Full text available:  pdf(1.55 MB)

Additional Information: [full citation](#), [abstract](#), [references](#), [cited by](#)

Bibliometrics: Downloads (6 Weeks): 2, Downloads (12 Months): 51, Citation Count: 2

This paper discusses the design and evaluation of CATNIP, a Context-Aware Transport/Network Internet Protocol for the Web. This integrated protocol uses application-layer knowledge (i.e., Web document size) to provide explicit context information to ...

Keyw ords: TCP/IP, internet protocols, network emulation, network simulation, web performance


8 [Efficient management for large-scale flash-memory storage systems with resource conservation](#)



Li-Pin Chang, Tei-Wei Kuo

November 2005 ACM Transactions on Storage (TOS), Volume 1 Issue 4

Publisher: ACM

Full text available:  pdf(1.45 MB)

Additional Information: [full citation](#), [abstract](#), [references](#), [index terms](#)

Bibliometrics: Downloads (6 Weeks): 36, Downloads (12 Months): 315, Citation Count: 1

Many existing approaches on flash-memory management are based on RAM-resident tables in which

one single granularity size is used for both address translation and space management. As high-capacity flash memory is becoming more affordable than ever, ...

Keywords: Flash memory, consumer electronics, embedded systems, memory management, portable devices, storage systems

9 [Implicit array bounds checking on 64-bit architectures](#)



Chris Bentley, Scott A. Watterson, David K. Lowenthal, Barry Rountree

December 2006 ACM Transactions on Architecture and Code Optimization (TACO). Volume 3 Issue 4

Publisher: ACM

Full text available: pdf(548.20 KB)

Additional Information: full citation, abstract, references, index terms

Bibliometrics: Downloads (6 Weeks): 3, Downloads (12 Months): 108, Citation Count: 0

Several programming languages guarantee that array subscripts are checked to ensure they are within the bounds of the array. While this guarantee improves the correctness and security of array-based code, it adds overhead to array references. This has ...

Keywords: 64-bit architectures, Array-bounds checking, virtual memory

10 [A comprehensive study of hardware/software approaches to improve TLB performance for java applications on embedded systems](#)



Jinzhao Peng, Guei-Yuan Lueh, Gansha Wu, Xiaogang Gou, Ryan Rakvic

October 2006 MSPC '06: Proceedings of the 2006 workshop on Memory system performance and correctness

Publisher: ACM

Full text available: pdf(242.82 KB)

Additional Information: full citation, abstract, references, index terms

Bibliometrics: Downloads (6 Weeks): 10, Downloads (12 Months): 113, Citation Count: 0

The working set size of Java applications on embedded systems has recently been increasing, causing the Translation Lookaside Buffer (TLB) to become a serious performance bottleneck. From a thorough analysis of the SPECjvm98 benchmark suite executing ...

Keywords: Java, TLB performance, embedded system

11 [Advanced non-distributed operating systems course](#)



Yair Wiseman

June 2005 ACM SIGCSE Bulletin. Volume 37 Issue 2

Publisher: ACM

Full text available: pdf(286.34 KB)

Additional Information: full citation, abstract, references, index terms

Bibliometrics: Downloads (6 Weeks): 2, Downloads (12 Months): 43, Citation Count: 0

The use of Non-Distributed Operating Systems is very common and old. Many researchers feel that this field of research is outmoded, and therefore put their efforts into Distributed Operating Systems. Advanced Operating Systems courses generally include ...

Keywords: graduate course, non-distributed operating systems, operating system kernel, operating systems

12 [A performance study of data layout techniques for improving data locality in refinement-based pathfinding](#)



Robert Niewiadomski, José Nelson Amaral, Robert C. Holte

December 2004 Journal of Experimental Algorithmics (JEA). Volume 9

Publisher: ACM

Full text available: pdf(1.46 MB)

Additional Information: full citation, abstract, references, cited by, index terms


Bibliometrics: Downloads (6 Weeks): 10, Downloads (12 Months): 119, Citation Count: 1

The widening gap between processor speed and memory latency increases the importance of crafting

data structures and algorithms to exploit temporal and spatial locality. Refinement-based pathfinding algorithms, such as Classic Refinement (CR), find quality ...

Keyw ords: Cache-conscious algorithms, classical refinement, pathfinding

13 [SecVisor: a tiny hypervisor to provide lifetime kernel code integrity for commodity OSes](#)

 Arvind Seshadri, Mark Luk, Ning Qu, Adrian Perrig
October 2007 SOSP '07: Proceedings of twenty-first ACM SIGOPS symposium on Operating systems principles

Publisher: ACM


Full text available:  pdf(264.11 KB) **Additional Information:** full citation, abstract, references, index terms

Bibliometrics: Downloads (6 Weeks): 22, Downloads (12 Months): 218, Citation Count: 0

We propose SecVisor, a tiny hypervisor that ensures code integrity for commodity OS kernels. In particular, SecVisor ensures that only user-approved code can execute in kernel mode over the entire system lifetime. This protects the kernel against code ...

Keyw ords: code attestation, code injection attacks, code integrity, hypervisor, memory virtualization, preventing

14 [SecVisor: a tiny hypervisor to provide lifetime kernel code integrity for commodity OSes](#)

 Arvind Seshadri, Mark Luk, Ning Qu, Adrian Perrig
October 2007 ACM SIGOPS Operating Systems Review. Volume 41 Issue 6

Publisher: ACM


Full text available:  pdf(264.11 KB) **Additional Information:** full citation, abstract, references, index terms

Bibliometrics: Downloads (6 Weeks): 22, Downloads (12 Months): 218, Citation Count: 0

We propose SecVisor, a tiny hypervisor that ensures code integrity for commodity OS kernels. In particular, SecVisor ensures that only user-approved code can execute in kernel mode over the entire system lifetime. This protects the kernel against code ...

Keyw ords: code attestation, code injection attacks, code integrity, hypervisor, memory virtualization, preventing

15 [GPGPU: general purpose computation on graphics hardware](#)

 David Luebke, Mark Harris, Jens Krüger, Tim Purcell, Naga Govindaraju, Ian Buck, Cliff Woolley, Aaron Lefohn

August 2004 SIGGRAPH '04: ACM SIGGRAPH 2004 Course Notes


Publisher: ACM

Full text available:  pdf(63.03 MB) **Additional Information:** full citation, abstract, cited by

Bibliometrics: Downloads (6 Weeks): 105, Downloads (12 Months): 1279, Citation Count: 3

The graphics processor (GPU) on today's commodity video cards has evolved into an extremely powerful and flexible processor. The latest graphics architectures provide tremendous memory bandwidth and computational horsepower, with fully programmable vertex ...

16 [t-kernel: providing reliable OS support to wireless sensor networks](#)

 Lin Gu, John A. Stankovic
October 2006 SenSys '06: Proceedings of the 4th international conference on Embedded networked sensor systems

Publisher: ACM

Full text available:  pdf(524.19 KB) **Additional Information:** full citation, abstract, references, cited by, index terms


Bibliometrics: Downloads (6 Weeks): 14, Downloads (12 Months): 293, Citation Count: 5

The development of a reliable large-scale wireless sensor network (WSN) is very difficult because of resource constraints, energy budget, and demanding application requirements. Three OS features-OS

protection, virtual memory, and preemptive scheduling-can ...

Keyw ords: OS protection, binary translation, low-power systems, virtual memory, wireless sensor networks

17 Improving the reliability of commodity operating systems

 Michael M. Swift, Brian N. Bershad, Henry M. Levy
December 2003 ACM SIGOPS Operating Systems Review, Volume 37 Issue 5
Publisher: ACM


Full text available:  pdf(262.78 KB) Additional Information: [full citation](#), [abstract](#), [references](#), [cited by](#), [index terms](#)


Bibliometrics: Downloads (6 Weeks): 28, Downloads (12 Months): 301, Citation Count: 25

Despite decades of research in extensible operating system technology, extensions such as device drivers remain a significant cause of system failures. In Windows XP, for example, drivers account for 85% of recently reported failures. This paper describes ...

Keyw ords: I/O, device drivers, protection, recovery, virtual memory

18 Improving the reliability of commodity operating systems

 Michael M. Swift, Brian N. Bershad, Henry M. Levy
October 2003 SOSP '03: Proceedings of the nineteenth ACM symposium on Operating systems principles
Publisher: ACM


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Bibliometrics: Downloads (6 Weeks): 28, Downloads (12 Months): 301, Citation Count: 25

Despite decades of research in extensible operating system technology, extensions such as device drivers remain a significant cause of system failures. In Windows XP, for example, drivers account for 85% of recently reported failures. This paper describes ...

Keyw ords: I/O, device drivers, protection, recovery, virtual memory

19 Improving the reliability of commodity operating systems

 Michael M. Swift, Brian N. Bershad, Henry M. Levy
February 2005 ACM Transactions on Computer Systems (TOCS), Volume 23 Issue 1
Publisher: ACM


Full text available:  pdf(499.98 KB) Additional Information: [full citation](#), [abstract](#), [references](#), [cited by](#), [index terms](#)

Bibliometrics: Downloads (6 Weeks): 32, Downloads (12 Months): 315, Citation Count: 9

Despite decades of research in extensible operating system technology, extensions such as device drivers remain a significant cause of system failures. In Windows XP, for example, drivers account for 85&percent; of recently reported failures. This article ...



Keyw ords: I/O, Recovery, device drivers, protection, virtual memory

20 Is data distribution necessary in OpenMP?

 Dimitrios S. Nikolopoulos, Theodore S. Papatheodorou, Constantine D. Polychronopoulos, Jesus Labarta, Eduard Ayguade;

November 2000 Supercomputing '00: Proceedings of the 2000 ACM/IEEE conference on Supercomputing (CDROM)

Publisher: IEEE Computer Society

Full text available:  pdf(116.52 KB)  Publisher Site Additional Information: [full citation](#), [abstract](#), [references](#), [cited by](#), [index terms](#)



Bibliometrics: Downloads (6 Weeks): 3, Downloads (12 Months): 38, Citation Count: 11

This paper investigates the performance implications of data placement in OpenMP programs running on modern ccNUMA multiprocessors. Data locality and minimization of the rate of remote memory accesses are critical for sustaining high performance on these ...

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